



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,855	05/26/2006	Juan Carlos Sanchez Recio	06057	7585
23338 7590 03/24/2010 DENNISON, SCHULTZ & MACDONALD 1727 KING STREET SUITE 105 ALEXANDRIA, VA 22314				
EXAMINER				
RIPA, BRYAND				
ART UNIT		PAPER NUMBER		
1795				
MAIL DATE		DELIVERY MODE		
03/24/2010		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/580,855

Applicant(s)

SANCHEZ RECIO ET AL.

Examiner

BRYAN D. RIPA

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 December 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/GS/US)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Response to Amendment

In response to the amendment received on December 28, 2009:

- claims 7-12 are currently pending
- the objection to the drawings is withdrawn in light of the amendments to figures 5 and 6
- the objection to the disclosure due to informalities is maintained
- the earlier objection and rejections of the claims are obviated due to the cancellation of claims 1-6
- new grounds of rejection are presented below as to newly added claims 7-12

Specification

1. The disclosure is objected to because of the following informalities: (1) on page 5 line 2, there are two commas after the word "aluminum" and before the word "as"; (2) on page 1 line 5, the waste to be treated is described as a waste "having magnesium" instead of manganese; and (3) on page 1 line 27 the spacing and closing parenthetical after "MANGANOUS SULPHATE SOLUTIONS" needs to be corrected.

Appropriate correction is required.

Additionally, with respect to the earlier referenced capitalization error, upon further inspection the Examiner noticed that the problem occurred because pages 5 and 6 of the specification had been scanned into the IFW system in the reverse order and was not the result of any typographical error requiring correction by the Applicant.

Claim Objections

2. Claim 12 is objected to because of the following informality. The claim recites "wherein the washing water of the pulp used as added water to a mixer" (see lines 1 and 2 of claim 12). It is suggested that the word "is" be inserted between "pulp" and "used".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 7 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

More specifically, claim 7 recites a limitation stating that "said waste is made to disappear" (see line 9 of claim 7). The use of the term "disappear" makes the claim

limitation unclear because it is unknown what applicant intends to exclude by the use of the word.

Please note, for examination purposes the Examiner will be treating the phrase as though it merely requires the waste stream to be treated or processed by the claimed method.

Additionally, claim 10 recites a limitation stating that the lixiviation step is carried out in "a reactor coated with antacid" (see line 4 of claim 10). The use of the term "antacid" is unclear because normally the term would denote the use of carbonate or some similar basic material used to neutralize an acid. However, here it is clear that the lixiviation reactor is intended to hold an acid mixture in order to remove or extract the manganese and then, subsequently, have the pH increased by the addition of lime, i.e. calcium carbonate (see Applicant's Specification at page 7 lines 18-28). Consequently, it is unclear what type of coating or material is intended by the limitation.

Please note, for examination purposes the Examiner will be treating the phrase as though it merely requires the reactor to have an inner lining or coating made of an acid-resistant material as described in the earlier Office Action (see page 10 with respect to the rejection of now cancelled claim 4).

The Examiner is aware of the fact that the specification as originally filled in the international application was filed in Spanish, and that the above described indefiniteness problems are most likely due to translation issues. However, it is necessary for the claims to reasonably convey to one of ordinary skill in the art what is covered by the claim limitations. See MPEP §2173. As a result, while in some cases a

literal translation may be sufficient for one of ordinary skill in the art to understand what is referred to and hence covered by the claim limitation, in the present instances the Examiner is of the opinion that the terms as presently claimed do not meet that threshold.

4. Claims 11 and 12 recite the limitations "the pulp" and "the resulting pulp" in lines 3 and 4 of claim 11 and also line 2 of claim 12. However, there is insufficient antecedent basis for these limitations in the claim.

Additionally, claim 12 also recites the limitation "the washing water" in the first and second lines of the claim. However, this limitation also lacks sufficient antecedent basis in the claim.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 7-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over CAROSELLA in view of GLOBUS.

Regarding claim 7, CAROSELLA teaches a method of obtaining electrolytic manganese from ferroalloy manufacturing waste or any other industrial waste having

manganese (see col. 1 lines 49-68 teaching the manganese slag as a manufacturing by-product having manganese as claimed) comprising:

- an initial treatment of the manganese oxides (see col. 2 lines 27-30);
- a hydrometallurgical phase comprising the steps of lixiviation (see col. 2 lines 31-37), primary purification (see col. 2 lines 51-60), secondary purification (see col. 2 lines 60-65) and conditioning (see col. 2 lines 65-69); and
- an electrolysis phase (see col. 3 lines 3-6).

Additionally, CAROSELLA teaches the method for processing manganese-bearing waste material (see col. 1 lines 59-68 teaching the use of manganese containing slags as a source material for the process), the purification steps to remove impurities consisting primarily of iron and aluminum being caused by pH control (see col. 2 lines 51-59), the removal of base metal impurities such as zinc being caused by the precipitation of the metal with sulfur (see col. 2 lines 51-59) and the production of a manganese metal product that is 99.9% pure (see col. 3 lines 3-6; col. 4 lines 20-23).

CAROSELLA, however, does not explicitly teach the initial treatment of the manganese oxides being an initial sulphation phase with the sulphation phase being a thermal process with near stoichiometric acid consumption.

However, GLOBUS teaches a process for obtaining electrolytic manganese where the initial treatment is an initial sulphation phase which is a thermal process with near stoichiometric acid consumption (see col. 1 line 59-col. 2 line 11 teaching the addition of sulfuric acid with the manganese oxides in a near stoichiometric amount in an exothermic process, i.e. thermal).

Moreover, one of ordinary skill in the art would have been motivated to combine the manganese sulphation steps of GLOBUS with the manganese production method of CAROSELLA because GLOBUS teaches the process being particularly suited for the treatment of low concentration manganese ore (see col. 1 lines 39-44). Furthermore, CAROSELLA teaches the use of waste slags generated from the production of ferromanganese having a manganese concentration within the range of GLOBUS (see col. 2 lines 7-21 teaching the waste slag from the production of ferromanganese having a manganese content of greater than 20% by weight). Thus, one of ordinary skill would have understood that the benefits of GLOBUS could also be applied to other low concentration manganese extractions such as in the treatment of manganese containing slags as taught by CAROSELLA.

Furthermore, CAROSELLA as modified by GLOBUS does not explicitly teach the waste produced being half that of the original and being self compactable. However, since CAROSELLA as modified by GLOBUS teaches all of the same method steps, one of ordinary skill in the art would expect that the same waste products to be produced. Additionally, CAROSELLA teaches the formation of the same byproducts, i.e. ferric hydroxide, base metal sulfides and sulfuric acid. Consequently, the waste produced would be expected to be of a similar amount and have similar properties.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to combine the initial sulphation phase of GLOBUS with the method of CAROSELLA in order to obtain a method as claimed.

Regarding claim 8, GLOBUS teaches the method of obtaining electrolytic manganese from ferroalloy manufacturing waste or any other industrial waste having manganese wherein the sulphation phase is carried out in a furnace in which exothermic reactions occur inside the furnace on polytetrafluoroethylene ("PTFE") trays generating SO₂ gases (see col. 1 lines 59-72; col. 2 lines 9-11).

Additionally, although GLOBUS does not teach the furnace having PTFE trays it is well known in the art to use PTFE or TEFLON coated trays in furnaces as a non-reactive coating. Consequently, it would have been readily obvious to one of ordinary skill in the art to use PTFE coated trays in the furnace of GLOBUS during the sulphation phase.

Regarding claim 9, CAROSELLA teaches the method of obtaining electrolytic manganese from ferroalloy manufacturing waste or any other industrial waste having manganese wherein the lixiviation step is carried out with the anolyte from the electrolysis cell (see col. 2 lines 31-36).

Regarding claim 10, CAROSELLA teaches the method of obtaining electrolytic manganese from ferroalloy manufacturing waste or any other industrial waste having manganese wherein the lixiviation step is performed while strongly stirring in the reactor coated with an antacid (see col. 2 lines 31-35 teaching the leaching with sulfuric acid, which one of ordinary skill in the art would have understood to require stirring in the

leaching vessel in order to ensure that as much of the manganese as possible is removed by the lixiviant).

However, although CAROSELLA does not explicitly teach the leaching vessel having such a lining, it is well known in the art to have an acid-resistant lining especially when the leaching is to be done by an acid leaching process. Consequently, it would have been obvious to one of ordinary skill in the art to use a leaching vessel or tank having an acid-resistant lining as claimed.

Regarding claim 11, CAROSELLA teaches the method of obtaining electrolytic manganese from ferroalloy manufacturing waste or any other industrial waste having manganese wherein the primary filtration step is carried out in the same reactor as the lixiviation by raising the pH of the pulp to near neutral levels and then subjecting the pulp to filtering in a filter press and washing with water thereby obtaining an inert waste (see col. 2 lines 51-56 and the figure teaching the raising of the pH to near neutral levels and then filtering with a filter press with subsequent washing of the filtrate or pulp with water).

Regarding claim 12, CAROSELLA teaches the method of obtaining electrolytic manganese from ferroalloy manufacturing waste or any other industrial waste having manganese wherein the washing water of the pulp can be reused successive times to concentrate the manganese therein (see col. 2 lines 51-56; see also discussion above

regarding the earlier claims as to the cited prior art meeting all of the earlier recited limitations).

Please note, the added limitations recite two alternative limitations requiring the use of either one or the other in the claimed process. Furthermore, since the second alternative merely recites that the washing water "can be re-used" and does not require that it be used, the prior art washing water need only be capable of operating in such a fashion in order to meet the claimed limitations. Here, it would clearly be possible in the modified prior art process for this to be the case. Moreover, it would have been readily obvious to do so since reusing the washing water would have increased the recovery of manganese and since it is readily known to do so when using solvent extraction to obtain higher yields.

Response to Arguments

Applicant's arguments with respect to claims 7-12 have been considered but are moot in view of the new ground(s) of rejection required for those claims.

However, because the same references are used in making the new grounds of rejection of claims 7-12 as that originally applied to claims 1-6, the Examiner will address the pertinent arguments still applicable below.

Applicant argues that:

"A slag is a material of a nature that differs much from that of the sludge from washing of the gases from silicate and ferro-manganese furnaces. Depending

on their manufacturing, and the TTT cooling curves, it has a more or less vitreous or crystalline nature, with bonds of a certain ion nature that the products treated in the present application do not have.” See Applicant’s Remarks at page 6

While the Examiner acknowledges differences between the slag of CAROSELLA and the sludge from the washing of the gases from silicate and ferro-manganese furnaces, the Examiner nevertheless respectfully disagrees with Applicant’s contention that the differences preclude the reference, as outlined previously, from reading on the claim limitations as presently presented.

Applicant further argues that:

“The Carosella procedure produces extractions below 30%, and is thus not a valid etch procedure for the purpose of the present invention, where the procedure is to: extract the Mn from the sludge by washing the production gases in a Si-Mn and Fe-Mn electric furnace, made up of a large mineral variety: MnO₂, MnO, beta-manganese silicate (MnSiO₃), natural products on the one hand (from the drift) and newly formed products on the other, such as beta-silicate and some oxides (as a result of a combination between Mn(g) SiO(g) O₂(g)). The etch performance is approximately 90% in the Applicants invention.” See Remarks at page 7.

While the Examiner acknowledges that there may be differences between the etch performance of CAROSELLA and that of Applicant’s disclosed invention, the Examiner nevertheless respectfully disagrees with Applicant’s contention that the differences preclude the reference, as outlined previously, from reading on the claim limitations as presently presented.

Additionally, it is noted that the Examiner is unaware of any teachings in CAROSELLA stating the procedure produces extractions below 30%. In fact, as noted on page 6 of Applicant's remarks, CAROSELLA teaches an etch performance of approximately 75% (see col. 4 lines 3-4).

Applicant also argues that:

In the Globus reference, a mineral is sulfated that can be poor in pyrolusite with S and H₂SO₄ in a mixed reactor at a temperature of 200 to 300°C. The reaction takes 2 to 8 hours, whereas in the present invention between 30 and 60 minutes are used, and there is no need to use S. Furthermore, sulfur is more expensive than the appropriate sulphuric acid and at present, with the tremendous excess of acids, it is not of interest to use sulphur to attain the same goal. One of the alternatives to the excess of sulphuric acid is to convert it into sulphur, with[sic] is very expensive, and the reason why acid is used directly in the present invention." See Remarks at page 7.

While the Examiner acknowledges that there are differences between the initial sulphation phase of GLOBUS and that of Applicant's disclosed invention, the Examiner nevertheless respectfully disagrees with Applicant's contention that the differences preclude the reference, as outlined previously, from reading on the claim limitations as presently presented.

Finally, Applicant argues that:

"None of the two patents mentions the problem of the organic matter, which in the etch with sulphuric acid produces an organic matter solution, turning it impure

and hindering the filtering operations at a real plant, thus making the industrial process economically unviable. The present application resolves the problem for the sludge from washing from the gases of silicate and ferro-manganese electric furnace gases.” See Remarks at page 8.

The Examiner respectfully disagrees with Applicant's contention that the failure to discuss the problem of organic matter somehow precludes the references, as outlined previously, from reading on the claim limitations as presently presented.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- 1) Van Der Meulen et al., (U.S. Pat. No. 3,975,190) (hereinafter referred to as “VAN DER MEULEN”) teaching the use of vessels having acid-resistant linings is known in the art when the vessel is to be used in an acid leaching process (see col. 1 lines 55-61).
- 2) Rosenblatt (U.S. Pat. No. 4,098,728) (hereinafter referred to as “ROSENBLATT”) teaching the use of Teflon or PTFE coated trays in known in the art for heating a heavy metal sulphate in an oven (see col. 12 lines 24-29).

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **BRYAN D. RIPA** whose telephone number is 571-270-7875. The examiner can normally be reached on Monday to Friday, 9:00 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Harry D Wilkins, III/
Primary Examiner, Art Unit 1795

/B. D. R./
Examiner, Art Unit 1795